REMARKS

In the non-final Office Action, the Examiner indicated that Applicants' claim for priority is not approved; indicated that a reference submitted with an information disclosure statement (IDS), filed February 3, 2004, is not a publication; rejected claims 1-22 under 35 U.S.C. § 112, second paragraph, as indefinite for failing to particularly point out and distinctly claim that which Applicants regard as the invention; rejected claims 1 and 14-16 under 35 U.S.C. § 101 as not being proper process claims; and rejected claims 1-9, 14-16, and 22 under 35 U.S.C. § 102(b) as anticipated by Liskov et al. (Replication in the Harp File System, October 1991).

By this Amendment, Applicants amend the specification, drawings, and claims 1-10 and 13-19 to improve form. Applicants also cancel claim 22 without prejudice or disclaimer and add new claim 23. Applicants respectfully traverse the Examiner's rejections under 35 U.S.C. §§ 112, 101, and 102. Claims 1-21 and 23 are pending.

PRIORITY TO PROVISIONAL APPLICATIONS

In paragraph 3 of the Office Action, the Examiner acknowledged Applicants' claim for priority based on: (1) provisional application 60/447,277 (hereinafter '277 provisional), filed February 14, 2003, and (2) provisional application 60/459,648 (hereinafter '648 provisional), filed April 3, 2003. The Examiner indicated that the inventive entity for the present application is different from the inventive entity of either of the provisional applications. The Examiner, therefore, indicated that the claim for priority is not approved. Applicants respectfully traverse the Examiner's disapproval of Applicants' claim for priority.

To claim the benefit of a provisional filing date, 35 U.S.C. § 119(e)(1) states:

> An application for patent filed under section 111(a) or section 363 of this title for an

> invention disclosed in the manner provided by the first paragraph of section 112 of this title in a provisional application filed under section 111(b) of this title, by an inventor or inventors named in the provisional application, shall have the same effect, as to such invention, as though filed on the date of the provisional application filed under section 111(b) of this title, if the application for patent filed under section 111(a) or section 363 of this title is filed not later than 12 months after the date on which the provisional application was filed and if it contains or is amended to contain a specific reference to the provisional application.

The Examiner misconstrued the requirement that both the utility application and the provisional application have an inventor or inventors in common as a requirement that the inventive entity be same between the utility application and the provisional application. The requirement is actually that there is at least one inventor in common between the utility application and the provisional application. M.P.E.P. § 201.11 clarifies this by stating:

> The statute also requires that the applications claiming benefit of the earlier filing date under 35 U.S.C. 119(e) or 120 be filed by an inventor or inventors named in the previously filed application or provisional application. >37 CFR 1.78(a)(1) and (a)(4) require that each prior-filed application must name as an inventor <u>at least one inventor named in the later-filed application</u> and disclose the named inventor's invention claimed in at least one claim of the later-filed application in the manner provided by the first paragraph of 35 U.S.C. 112.<

(emphasis added).

The present application names an inventor (Sanjay Ghemawat) who is also named in both the '277 and '648 provisional applications. Therefore, the present application and the '277 and '648 provisional applications satisfy the requirement of at least one inventor in common.

Accordingly, the present application properly claims priority to both the '277 and '648 provisional applications. Acknowledgement of Applicants' claim is respectfully requested.

INFORMATION DISCLOSURE STATEMENT

In paragraph 4 of the Office Action, the Examiner indicated that a document submitted with the IDS, filed February 3, 2004, was not considered because the document is not an actual

document. Instead, the Examiner contends that the document is a web site (www.inter-mezzo.org) associated with the computer product "InterMezzo." Applicants respectfully disagree.

With the IDS, filed February 3, 2004, Applicants submitted a page from the www.inter-mezzo.org web site. This page constitutes the document that Applicants want the Examiner to consider for IDS purposes. The Examiner's refusal to consider this document as allegedly "not an actual document" is not supported by any patent law.

Applicants respectfully request that the Examiner consider this IDS document. Applicants submit herewith, as an attachment, a copy of the IDS document and the form 1449 on which the document is cited. Applicants respectfully request that the Examiner consider the document, initial and sign the form 1449 as appropriate, and return a copy of the form 1449 to Applicants with the next communication.

REJECTION UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

In paragraph 6 of the Office Action, the Examiner rejected pending claims 1-21 under 35 U.S.C. § 112, second paragraph, as allegedly indefinite for failing to particularly point out and distinctly claim that which Applicants regard as the invention. Applicants respectfully traverse.

In paragraph 6(a) of the Office Action, the Examiner alleged that it is unclear what the relationship is between elements "one replica of data" (claim 1), "replica of data" (claim 14), "primary replica of data," and "secondary replica of data." Applicants respectfully submit that the Examiner's allegation lacks merit.

First, 35 U.S.C. § 112 does not require that Applicants identify the relationship between elements in different independent claims. Therefore, Applicants need not clarify whether "one

replica of data" (independent claim 1) is the same as or different from "replica of data" (independent claim 14) since these features are recited in different independent claims. Further, neither claim 1 nor claim 14 recites "primary replica of data" or "secondary replica of data," as alleged by the Examiner. Instead, claims 1 and 14 previously recited "primary replica" and have been amended to recite "primary replica server." Similarly, claim 1 recited "at least one secondary replica" and claim 14 recited "secondary replicas" and have been amended to recite "at least one secondary replica server" and "secondary replica servers," respectively. Applicants submit that the features of claims 1 and 14 are clear and properly supported by Applicants' specification. Accordingly, Applicants respectfully request that the rejection of claims 1 and 14 be reconsidered and withdrawn.

Also in paragraph 6(a) of the Office Action, the Examiner alleged that claims 1 and 14-17 do not mention "original data" from which any and all replicas of data are derived and, therefore, the claims appear to be missing essential matter (i.e., "original data"). Applicants respectfully submit that the Examiner's allegation lacks merit.

Independent claims 1, 14, 16, and 17 recite "replicas of data" and independent claim 15 recites "replica of data." These claims clearly recite that the replicas are replicas of data. It is clear that the "data" is the original data that the Examiner alleged was missing from the claim.

Further, Applicants' specification clearly describes that chunks of a file are stored as chunk "replicas" at chunk servers 120 (paragraph 0061). Therefore, claims 1 and 14-17 find clear support for "replicas" in Applicants' specification. Accordingly, Applicants respectfully request that the rejection of claims 1 and 14-17 be reconsidered and withdrawn.

In paragraph 6(b) of the Office Action, the Examiner alleged that claims 1 and 14-17 are

unclear because they allegedly are missing essential structural information to distinguish how "one replica of data," "primary replica of data," and "secondary replica of data" are structurally or functionally different from each other. Applicants note that the Examiner misconstrued the language of claims 1 and 14-17. These claims did not recite "primary replica of data" or "secondary replica of data." Instead, these claims recited "primary replica" and "secondary replica" or "secondary replicas." Applicants object to the Examiner's misquoting of language of Applicants' claims. Nevertheless, Applicants have amended claims 1, 14, 16, and 17 to recite "primary replica server" and "secondary replica server" or "secondary replica servers." Applicants have also amended the specification and drawings to clarify this change. No new matter has been added in making these changes. Accordingly, Applicants respectfully request that the rejection of claims 1 and 14-17 be reconsidered and withdrawn.

In paragraph 6(c) of the Office Action, the Examiner alleged that claim 1 is incomplete for missing essential structural cooperative relationships between elements. The Examiner alleged that in "sending data associated with the data-modifying operation . . . based on a network topology" it is unclear what relationships are being claimed due to the use of the "based on" terminology. Applicants have amended claim 1 to remove the "based on" clause. Accordingly, Applicants respectfully request that the rejection of claim 1 be reconsidered and withdrawn.

Also in paragraph 6(c) of the Office Action, the Examiner alleged that claim 1 is unclear because the claim does not identify how or by what element the "independently sending" feature is independent. Applicants have amended claim 1 to remove "independently." Accordingly, Applicants respectfully request that the rejection of claim 1 be reconsidered and withdrawn.

In paragraph 6(d) of the Office Action, the Examiner alleged that claims 1 and 14-16 recite use of data associated with the data-modifying operation but does not set forth any steps involved in the method/process. Applicants have amended claims 1 and 14-16 to indicate that the data-modifying control signal requests execution of the data-modifying operation on the data associated with the data-modifying operation. Accordingly, Applicants respectfully request that the rejection of claims 1 and 14-16 be reconsidered and withdrawn.

In paragraph 6(e) of the Office Action, the Examiner alleged that use of the term "closest" in claims 2, 3, and 15 is a relative term that renders the claims indefinite. Applicants respectfully disagree.

Claims, 2, 3, and 15 define closest in terms of a sender of data. For example, claim 2 recites pushing data to the primary replica server or at least one secondary replica server that is closest in the network topology "relative" to the sender of the data. Therefore, claim 2 properly defines the term "closest." Similar arguments apply to claims 3 and 15. Accordingly, Applicants respectfully request that the rejection of claims 2, 3, and 15 be reconsidered and withdrawn.

In paragraph 6(f) of the Office Action, the Examiner alleged that claim 5 is unclear because it is not known what activity is performed by "pipelining transmission of the data." Applicants define an example of "pipelining" in paragraph 0098 of Applicants' specification. Applicants remind the Examiner that claims are not to be read in a vacuum, but instead should be read in light of the specification. Claim 5 is clear and definite in light of Applicants' specification. Accordingly, Applicants respectfully request that the rejection of claim 5 be reconsidered and withdrawn.

In paragraph 6(g) of the Office Action, the Examiner alleged that claims 15 and 16 are

indefinite because the language suggests that there may be more than one primary replica server and, therefore, makes it unclear how many primary replica servers are recited in the claims. Applicants respectfully disagree.

Claim 15 recites receiving data associated with a data-modifying operation at one of {the primary replica server or the at least one secondary replica server} . . . and forwarding the data to another one of {the primary replica server or the at least one secondary replica server} from the one of {the primary replica server or the at least one secondary replica server} . . . . The brackets should help the Examiner understand the claim. Claim 15 clearly recites that the data is received at either the primary replica server or the at least one secondary replica server and forwarded from the primary replica server or at least one secondary replica server that received the data. The data is forwarded to either the primary replica server or the at least one secondary replica server ("another one of the primary replica server or the at least one secondary replica server") depending on whether the primary replica server or the at least one secondary replica server is the one forwarding the data.

Claim 15 is, therefore, definite. Claim 16 is similarly definite for at least similar reasons. Accordingly, Applicants respectfully request that the rejection of claims 15 and 16 be reconsidered and withdrawn.

In paragraph 6(h) of the Office Action, the Examiner alleged that pending claims 10-13 and 17 are unclear because the term "master" is unknown and not defined by the claims. Applicants respectfully submit that the Examiner's allegation lacks merit. Applicants describe the master throughout Applicants' specification (see, for example, Figs. 1 and 3-15 and their corresponding description in the specification). Applicants remind the Examiner that claims are

not to be read in a vacuum, but instead should be read in light of the specification. Claims 10-13 and 17 are clear and definite in light of Applicants' specification. Accordingly, Applicants respectfully request that the rejection of claims 10-13 and 17 be reconsidered and withdrawn.

In paragraph 6(i) of the Office Action, the Examiner alleged that pending claims 1-21 are unclear because the terminology "primary replica" and "secondary replica" are confusing. Applicants have amended claims 1, 14, 16, and 17 to recite "primary replica server" and "secondary replica server" or "secondary replica servers." Applicants have also amended the specification and drawings to clarify this change. No new matter has been added in making these changes. Accordingly, Applicants respectfully request that the rejection of claims 1-21 be reconsidered and withdrawn.

In paragraph 6(j) of the Office Action, the Examiner alleged that it is unclear what the difference is between "sending data" and "pushing data" in pending claims 2 and 14. 35 U.S.C. § 112 does not require that Applicants identify the relationship between features in different sets of claims. Therefore, Applicants need not clarify how the definitions of the terms sending and pushing are similar or different since these features are recited in different sets of claims. Applicants submit that both terms find proper support in the specification.. Accordingly, Applicants respectfully request that the rejection of claims 2 and 14 be reconsidered and withdrawn.

In view of the foregoing, Applicants respectfully submit that claims 1-21 satisfy the requirements of 35 U.S.C. § 112, second paragraph. Therefore, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 1-21 under 35 U.S.C. § 112, second paragraph.

REJECTION UNDER 35 U.S.C. § 101

In paragraph 6(d) of the Office Action, the Examiner rejected claims 1 and 14-16 under 35 U.S.C. § 101 alleging that the claimed recitation of a use without setting forth any steps involved in the process results in an improper definition of a process. Applicants respectfully submit that the Examiner's rejection finds no support in the U.S. patent laws. Nevertheless, solely to expedite prosecution, Applicants have amended claims 1 and 14-16 to recite that the data-modifying control signal requests execution of the data-modifying operation on the data associated with the data-modifying operation.

Applicants submit that claims 1 and 14-16 satisfy the requirements of 35 U.S.C. § 101. Accordingly, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 1 and 14-16 under 35 U.S.C. § 101.

REJECTION UNDER 35 U.S.C. § 102

In paragraph 8 of the Office Action, the Examiner rejected pending claims 1-9 and 14-16 under 35 U.S.C. § 102(b) as allegedly anticipated by Liskov et al. Applicants respectfully traverse the rejection.

A proper rejection under 35 U.S.C. § 102 requires that a single reference teach every aspect of the claimed invention either expressly or impliedly. Any feature not directly taught must be inherently present. In other words, the identical invention must be shown in as complete detail as contained in the claim. See M.P.E.P. § 2131. Liskov et al. does not disclose or suggest the combination of features recited in claims 1-9 and 14-16.

For example, amended independent claim 1 is directed to a method for performing a data-modifying operation in a file system that includes a plurality of servers that store replicas of data,

one of the servers serving as a primary replica server for one of the replicas of data and at least one other one of the servers serving as at least one secondary replica server for the one replica of data. The method comprises sending data associated with the data-modifying operation to the primary replica server and the at least one secondary replica server and sending a data-modifying control signal that requests execution of the data-modifying operation on the data associated with the data-modifying operation to the primary replica server and the at least one secondary replica server. A sequence in which the data associated with the data-modifying operation is received at each of the primary replica server and the at least one secondary replica server is independent of a sequence in which the data-modifying control signal is received at each of the primary replica server and the at least one secondary replica server.

Liskov et al. does not disclose or suggest the combination of features recited in claim 1. For example, Liskov et al. does not disclose or suggest that a sequence in which the data associated with the data-modifying operation is received at each of the primary replica server and the at least one secondary replica server is independent of a sequence in which the data-modifying control signal is received at each of the primary replica server and the at least one secondary replica server. Instead, Liskov et al. discloses that information from a client is sent just to a primary server and the primary server decides what to do and communicates with the backup servers as needed (section 4.1, second paragraph).

For at least these reasons, Applicants submit that claim 1 is not anticipated by Liskov et al. Claims 2-9 depend from claim 1 and are, therefore, not anticipated by Liskov et al. for at least the reasons given with regard to claim 1. Claims 2-9 are also not anticipated by Liskov et al. for reasons of their own.

For example, claim 2 recites pushing the data to one of the primary replica server or the at least one secondary replica server that is closest in a network topology to a sender of the data, the one of the primary replica server or the at least one secondary replica server serving as a closest replica server. Liskov et al. does not disclose or suggest the combination of features recited in claim 2. Instead, Liskov et al. discloses that a client sends information just to a primary server (section 4.1, second paragraph). Liskov et al. does not disclose anything remotely similar to pushing data to either a primary replica server or at least one secondary replica server that is closest in a network topology to a sender of the data.

The Examiner alleged that Liskov et al. discloses the features of claim 2 and cited section 1 (Introduction), paragraph 3 of Liskov et al. for support (Office Action, paragraph 8). Contrary to the Examiner's allegation, nowhere in paragraph 3 of section 1 does Liskov et al. disclose or remotely suggest pushing data to one of the primary replica server or the at least one secondary replica server that is closest in a network topology to a sender of the data, as required by claim 2.

For at least these additional reasons, Applicants respectfully submit that claim 2 is not anticipated by Liskov et al. Claims 3 and 4 depend from claim 2 and are, therefore, not anticipated by Liskov et al. for at least the additional reasons given with regard to claim 2.

Claim 6 recites receiving the data at one of the primary replica server or the at least one secondary replica server, and while receiving the data at the one of the primary replica server or the at least one secondary replica server, forwarding the data to another one of the primary replica server or the at least one secondary replica server. Liskov et al. does not disclose or suggest the combination of features recited in claim 6. In fact, Liskov et al. does not disclose anything remotely similar to forwarding data while receiving the data.

The Examiner alleged that Liskov et al. discloses the features of claim 6 and cited section 4.2 (Normal Case Processing) of Liskov et al. for support (Office Action, paragraph 8). Contrary to the Examiner's allegation, nowhere in section 4.2 does Liskov et al. disclose or remotely suggest receiving the data at one of the primary replica server or the at least one secondary replica server, and while receiving the data at the one of the primary replica server or the at least one secondary replica server, forwarding the data to another one of the primary replica server or the at least one secondary replica server, as required by claim 6.

For at least these additional reasons, Applicants respectfully submit that claim 6 is not anticipated by Liskov et al.

Amended independent claim 14 is directed to a system for performing a data-modifying operation in a file network that includes a plurality of servers that store replicas of data, one of the servers serving as a primary replica server for one of the replicas of data and other ones of the servers serving as secondary replica servers for the one replica of data. The system comprises means for pushing data associated with the data-modifying operation to the primary replica server and the secondary replica servers and means for sending a data-modifying control signal to the primary replica server and the secondary replica servers, where the data-modifying control signal requests execution of the data-modifying operation on the data associated with the data-modifying operation. The data associated with the data-modifying operation is pushed to the primary replica server and the secondary replica servers in an order independent of an order in which the data-modifying control signal is sent to the primary replica server and the secondary replica servers.

Liskov et al. does not disclose or suggest the combination of features recited in claim 14.

For example, Liskov et al. does not disclose or suggest that data associated with a data-modifying operation is pushed to the primary replica server and the secondary replica servers in an order independent of an order in which a data-modifying control signal is sent to the primary replica server and the secondary replica servers. Instead, Liskov et al. discloses that information from a client is sent just to a primary server and the primary server decides what to do and communicates with the backup servers as needed (section 4.1, second paragraph).

For at least these reasons, Applicants submit that claim 14 is not anticipated by Liskov et al.

Amended independent claim 15 is directed to a file system, comprising a primary replica server configured to store a replica of data and at least one secondary replica server configured to also store the replica of data. The primary replica server and the at least one secondary replica server in combination are configured to receive data associated with a data-modifying operation at one of the primary replica server or the at least one secondary replica server that is closest to a sender of the data, forward the data to another one of the primary replica server or the at least one secondary replica server from the one of the primary replica server or the at least one secondary replica server that is closest to the sender of the data, receive, at the primary replica server, a data-modifying control signal that requests execution of the data-modifying operation on the data associated with the data-modifying operation, and forward the data-modifying control signal to the at least one secondary replica server from the primary replica server.

Liskov et al. does not disclose or suggest the combination of features recited in claim 15. For example, Liskov et al. does not disclose or suggest receiving data associated with a data-modifying operation at one of the primary replica server or the at least one secondary replica

server that is closest to a sender of the data. Instead, Liskov et al. discloses that information from a client is sent just to a primary server and the primary server decides what to do and communicates with the backup servers as needed (section 4.1, second paragraph). Liskov et al. does not disclose or suggest any notion that information is sent to the primary server because the primary server is closer to the client than the backup servers.

For at least these reasons, Applicants submit that claim 15 is not anticipated by Liskov et al.

Amended independent claim 16 is directed to a method for performing a data-modifying operation in a file system that includes a plurality of servers that store replicas of data, one of the servers serving as a primary replica server for one of the replicas of data and other ones of the servers serving as secondary replica servers for the one replica of data. The method comprises receiving data associated with the data-modifying operation at the primary replica server or one of the secondary replica servers; forwarding the data from the primary replica server or one of the secondary replica servers to other ones of the primary replica server or the secondary replica servers; receiving, at the primary replica server, a data-modifying signal that requests execution of the data-modifying operation on the data associated with the data-modifying operation, the primary replica server receiving the data-modifying signal independently of the data; and forwarding the data-modifying signal to the secondary replica servers.

Liskov et al. does not disclose or suggest the combination of features recited in claim 16. For example, Liskov et al. does not disclose or suggest a primary replica server that receives a data-modifying signal independently of data associated with a data-modifying operation. Instead, Liskov et al. discloses that information from a client is sent just to a primary server and the

primary server decides what to do and communicates with the backup servers as needed (section 4.1, second paragraph).

The Examiner did not specifically address this feature of claim 16 and, therefore, did not establish a proper case of anticipation with regard to claim 16.

For at least these reasons, Applicants submit that claim 16 is not anticipated by Liskov et al.

In view of the foregoing, Applicants respectfully submit that claims 1-9 and 14-16 are not anticipated by Liskov et al. Therefore, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 1-9 and 14-16 under 35 U.S.C. § 102.

NEW CLAIM 23

New independent claim 23 is directed to a file system that includes a plurality of servers that store replicas of data, one of the servers serving as a primary replica server for one of the replicas of data and other ones of the servers serving as secondary replica servers for the one replica of data. The file system comprises means for sending data associated with a data-modifying operation from a client to the primary replica server and the secondary replica servers in a first sequence; and means for sending a data-modifying control signal that requests execution of the data-modifying operation on the data associated with the data-modifying operation to the primary replica server and the secondary replica servers in a second sequence, where the second sequence is independent of the first sequence.

Liskov et al. does not disclose or suggest the combination of features recited in claim 23. For example, Liskov et al. does not disclose or suggest anything similar to sending data and a control signal to primary and secondary replica servers in first and second sequences,

respectively, where the second sequence is independent of the first sequence.

For at least these reasons, Applicants submit that claim 23 is patentable over Liskov et al.

In view of the foregoing amendments and remarks, Applicants respectfully request the Examiner's reconsideration of the application and the timely allowance of pending claims 1-21 and 23.

If the Examiner does not believe that all pending claims are now in condition for allowance, the Examiner is urged to contact the undersigned to expedite prosecution of this application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,

HARRITY & SNYDER, L.L.P.

By: _____
Paul A. Harrity
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Attachment: Replacement Sheets of Drawings
Copy of 1449 and InterMezzo document

Attachment: Replacement Sheets of Drawings

Amendments to the Drawings:

The attached sheets of drawings include changes to Figs. 12 and 13. These sheets replace the original sheets including Figs. 12 and 13. The drawings have been amended to identify replica "servers" in a manner consistent with the specification. No new matter has been added.

Attachment: Replacement Sheets

Attachment: Copy of 1449 and InterMezzo Document